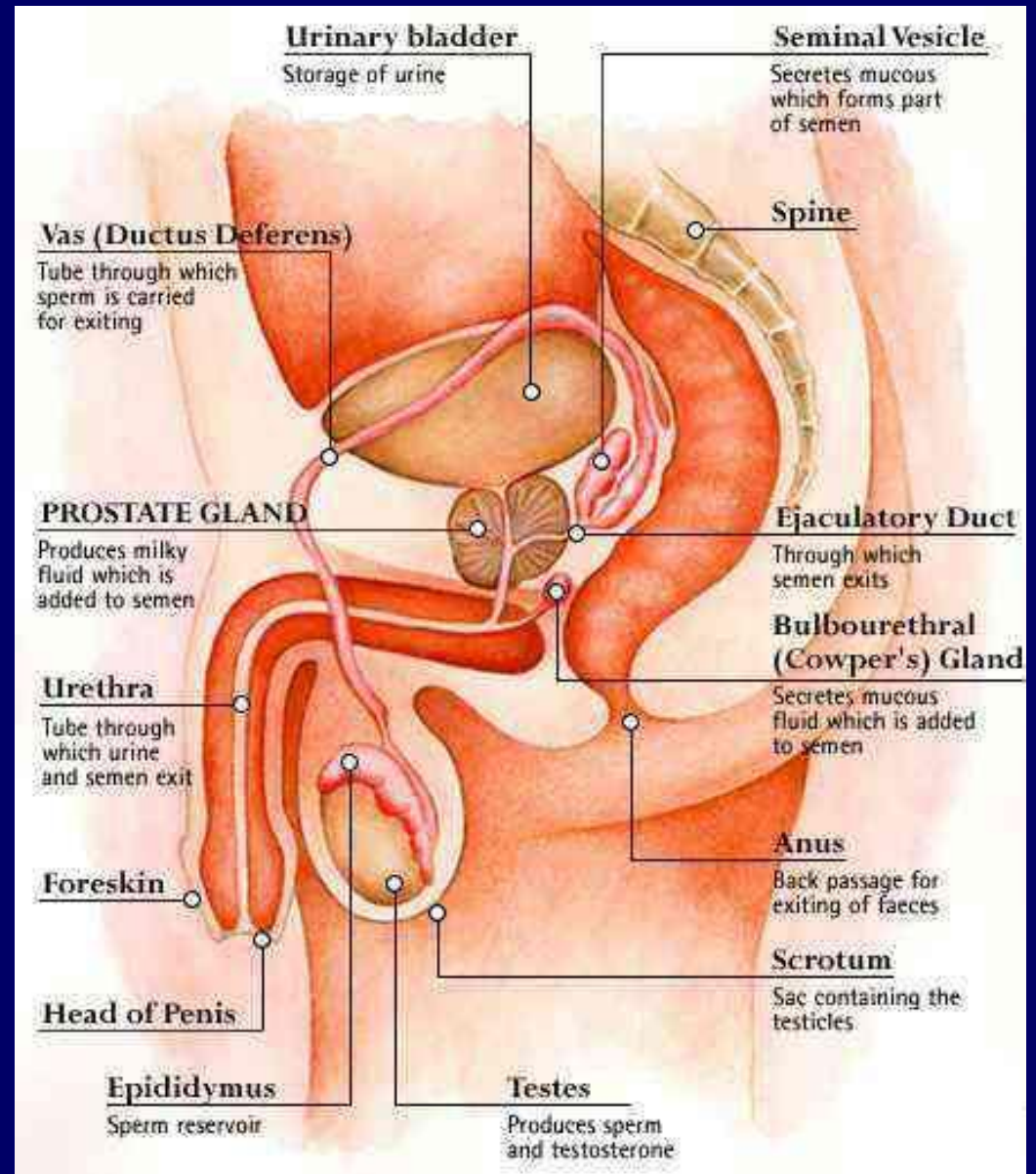
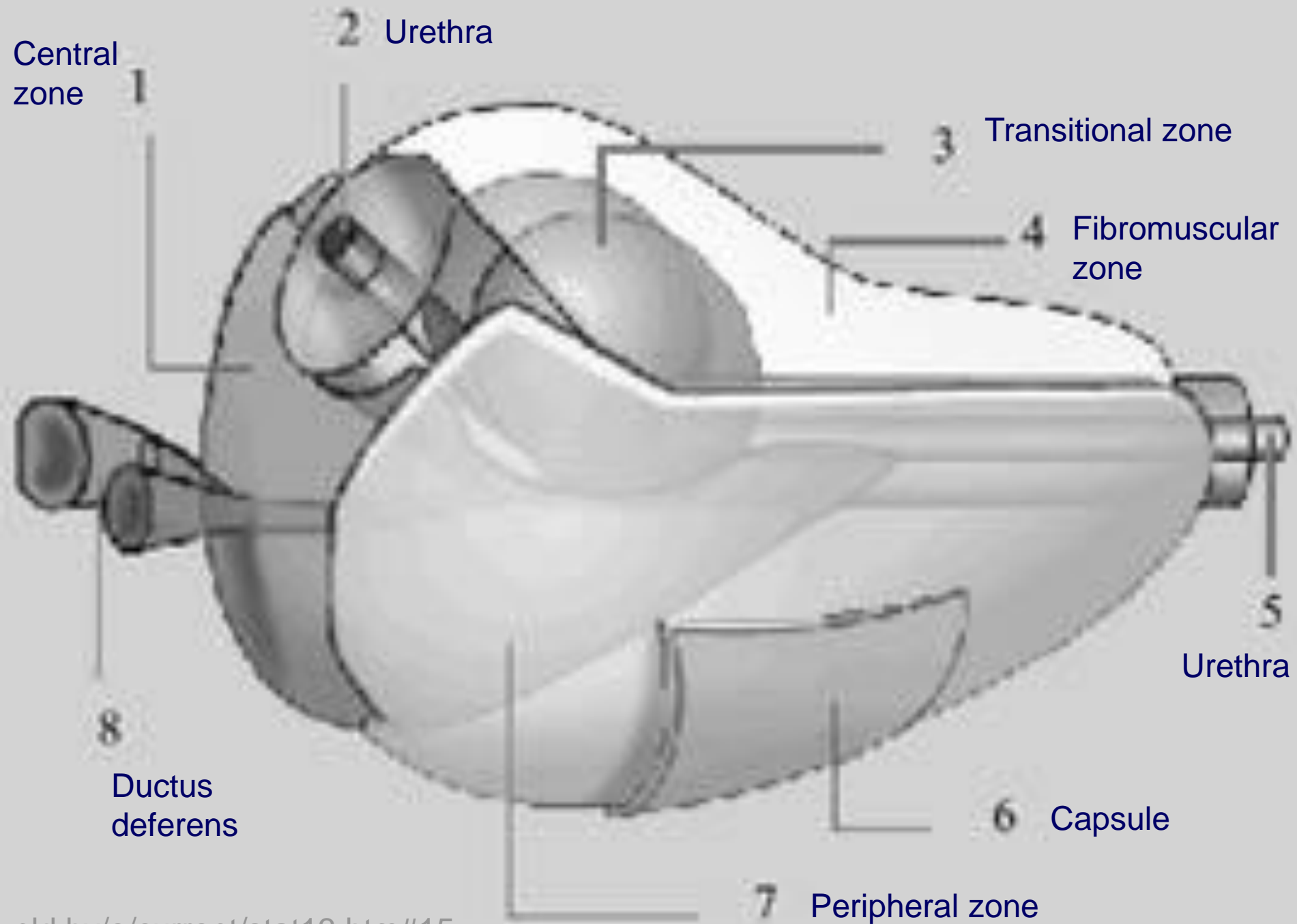


Prostate Cancer

Louanne Currence, RHIT, CTR

"You and Your Prostate,"
produced by the [Australian
Department of Veterans'
Affairs](#).





Lobes of the Prostate

- Anterior lobe
- Median lobe
- Lateral lobe
- Posterior lobe

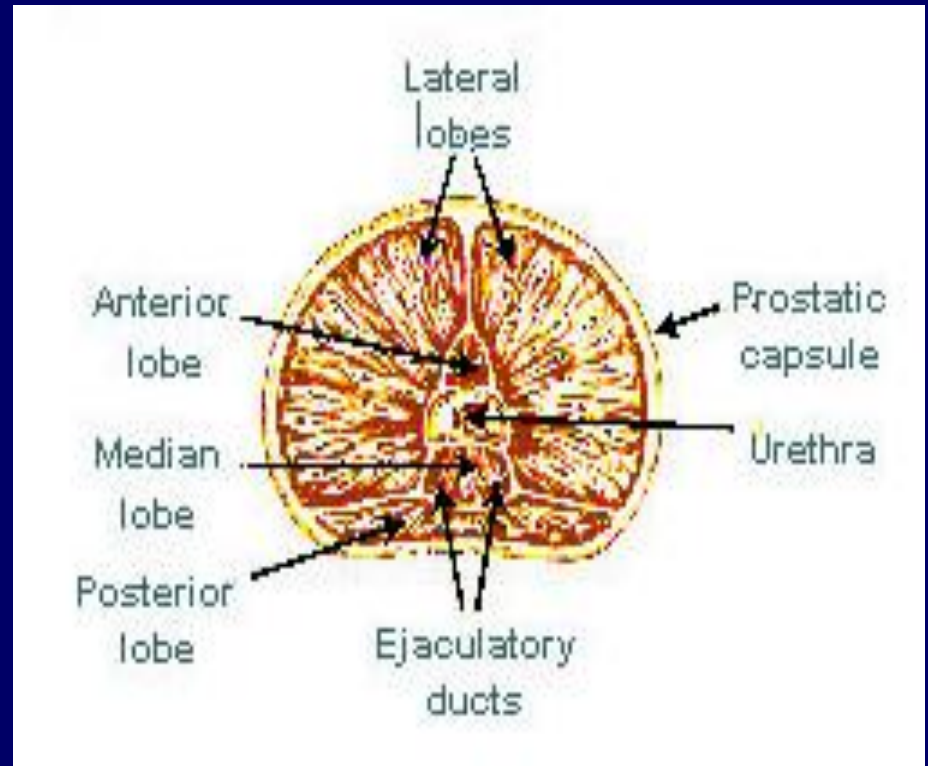


Image Source: SEER Training Website

Zones of the Prostate

- Peripheral
- Central
- Transitional

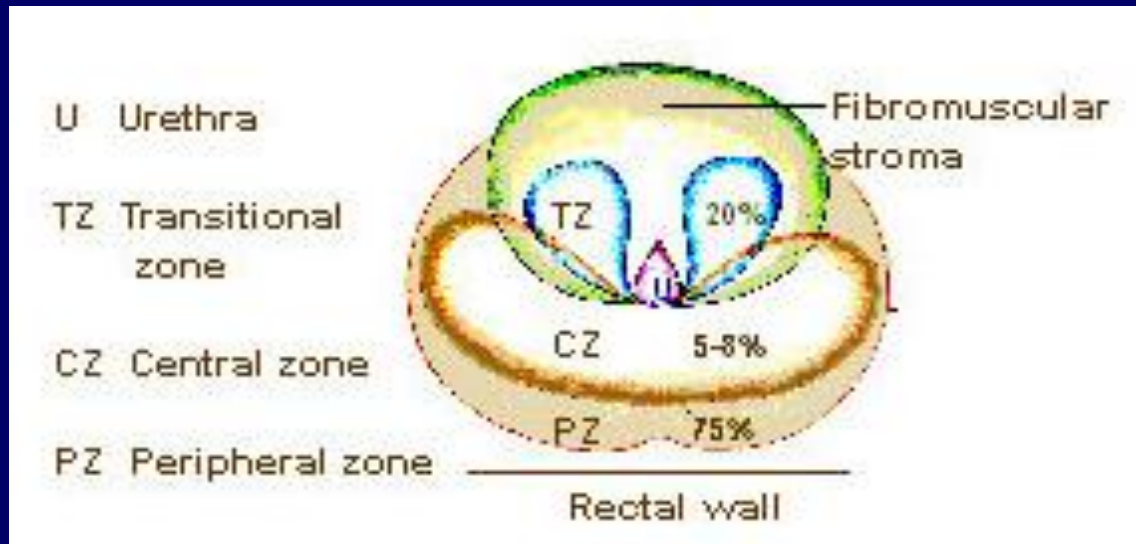


Image Source: SEER Training Website



Prostate Cancer Facts

- #1 cancer in men (non-skin)
 - 1/6 men diagnosed
 - Estimate 230,000 new cases in 2006
 - 1/34 men die of prostate cancer
 - Estimate 27,000 deaths in 2006
 - 70% over 65 y.o. at diagnosis
 - 90% diagnosed at early stage
 - Over past 20 years, survival ↑ 67% to 97%
-



Risk Factors

- ☐ Male
 - ☐ Age
 - ☐ Race
 - Higher rate in African-American, lower in Asian
 - ☐ Family history (1st degree relatives)
 - ☐ Diet?
-



Symptoms

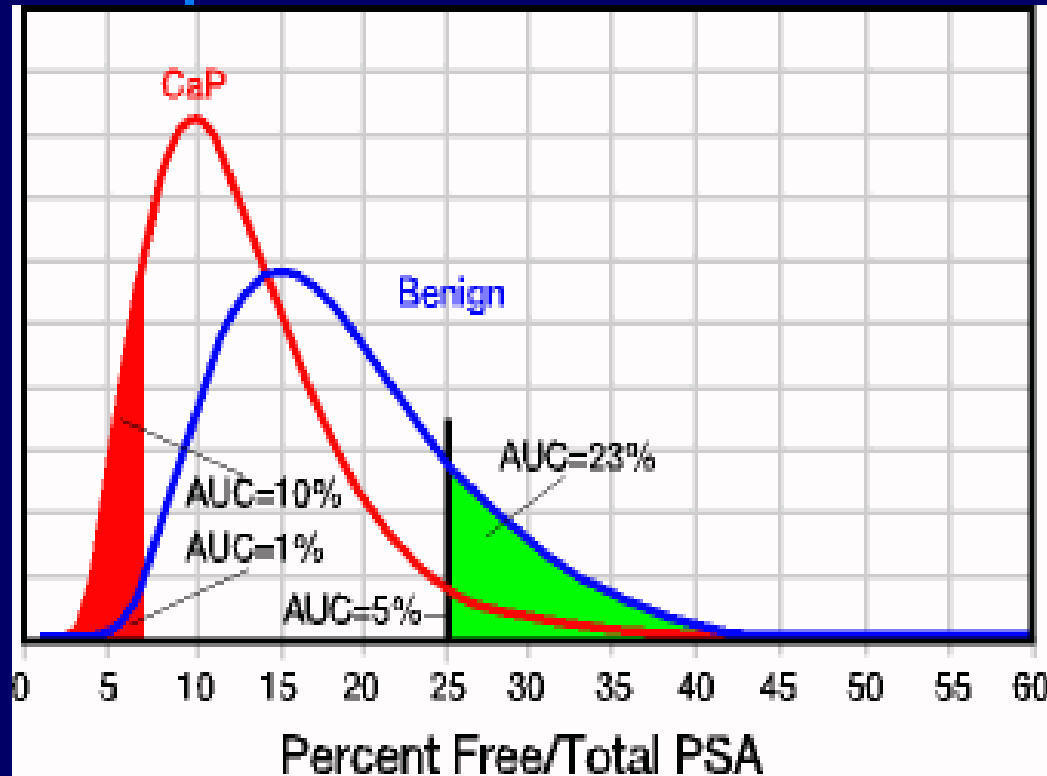
- ❑ a difficulty in starting to pass urine
 - ❑ a weak, sometimes intermittent flow of urine
 - ❑ dribbling of urine before and after urinating
 - ❑ a frequent or urgent need to pass urine
 - ❑ a need to get up several times in the night to urinate
 - ❑ a feeling that the bladder is not completely empty
 - ❑ rarely, blood in the urine
-



Prostatic Specific Antigen

- Protein produced by cells of prostate gland
 - Test introduced in 1986
 - Age influenced
 - 40 - 49 / 2.5
 - 50 - 59 / 3.5
 - 60 - 69 / 4.5
 - 70 - 79 / 6.5
 - Elevated indicates possible CA dx
 - PSA 4 – 10 indicates 25-35% risk of cancer diagnosis
 - PSA 10 – 20 indicates 65% risk of cancer diagnosis
 - PSA > 20 indicates possible metastatic disease
-

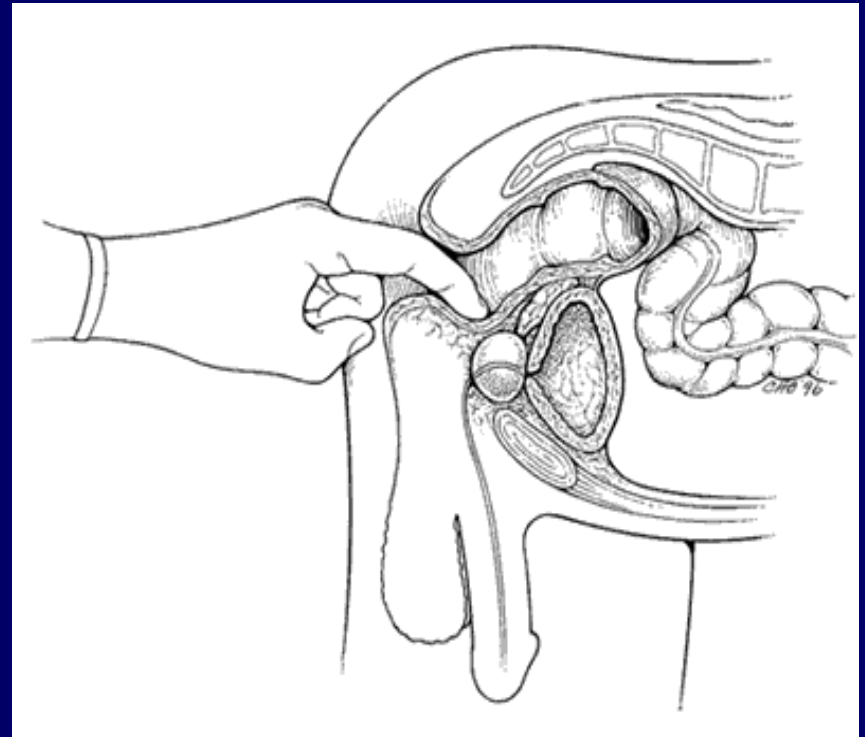
Free PSA



- PSA that circulates in blood w/o carrier protein
- The lower the % of free PSA, the greater the risk of CaP
 - Free PSA > 24% probably benign

DRE

- ❑ PSA can be falsely elevated
- ❑ DRE does not palpate entire prostate gland
- ❑ Abnormal: nodules, hard spots, soft spots, enlarged



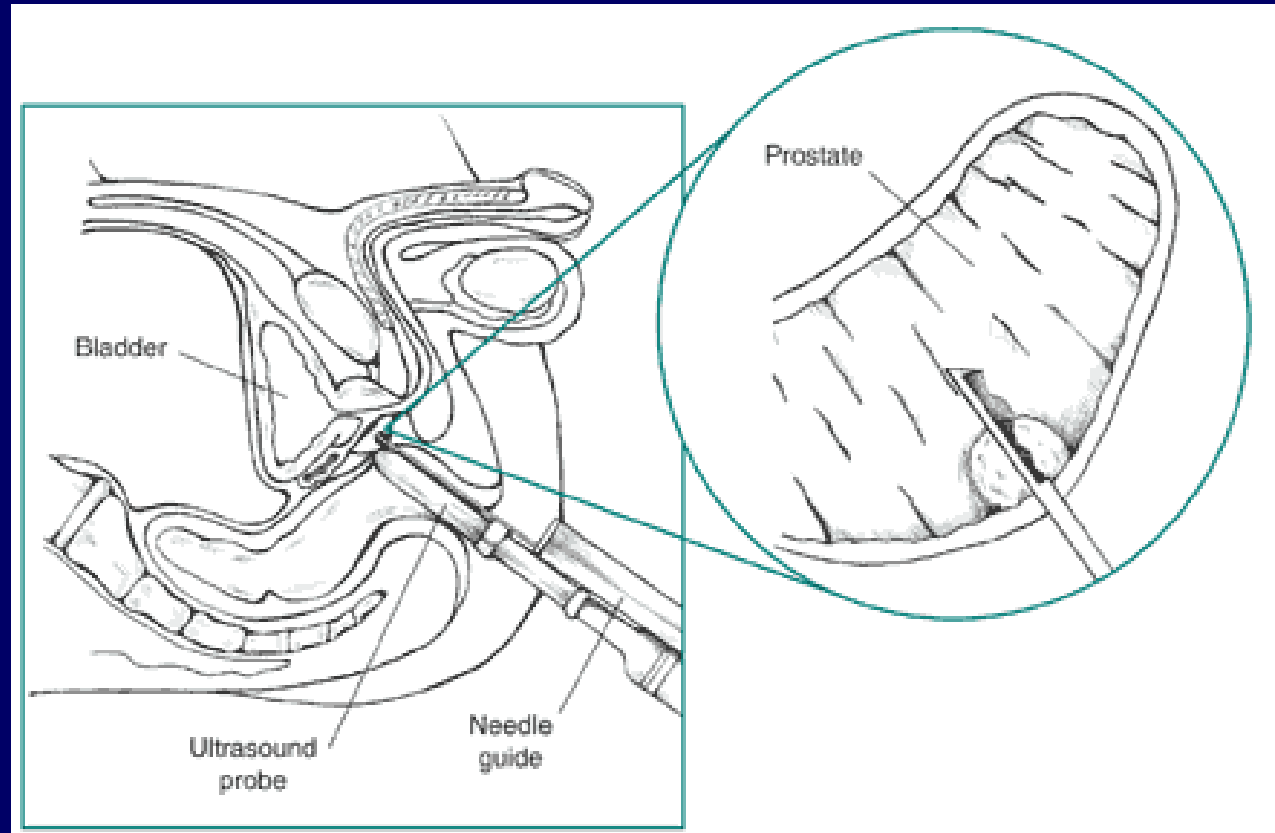


Screening

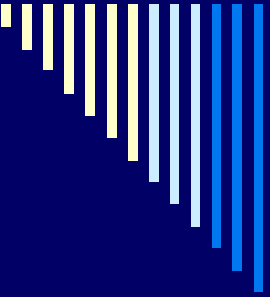
- AUA recommendation:
 - Annual PSA, DRE
Caucasion > 50 y.o.
 - Annual PSA Af-Am
males > 40 OR men
w/+ FH
- ACS: Annual tests
men > 50 y.o. IF 10
years of life expected
(earlier AA men, + FH)
- American College of
Preventive Medicine:
 - Recommends against
routine screening tests
(PSA/DRE)
 - Men over 50 w/10
years life should be
told about benefits &
harms of screening

Biopsy (TRUSP)

- Hypoechoic shows abnormal area needing biopsy



kidney.niddk.nih.gov/kudiseases



Transrectal
sonogram of the
prostate. Looking
up from the feet of a
patient toward his
head.



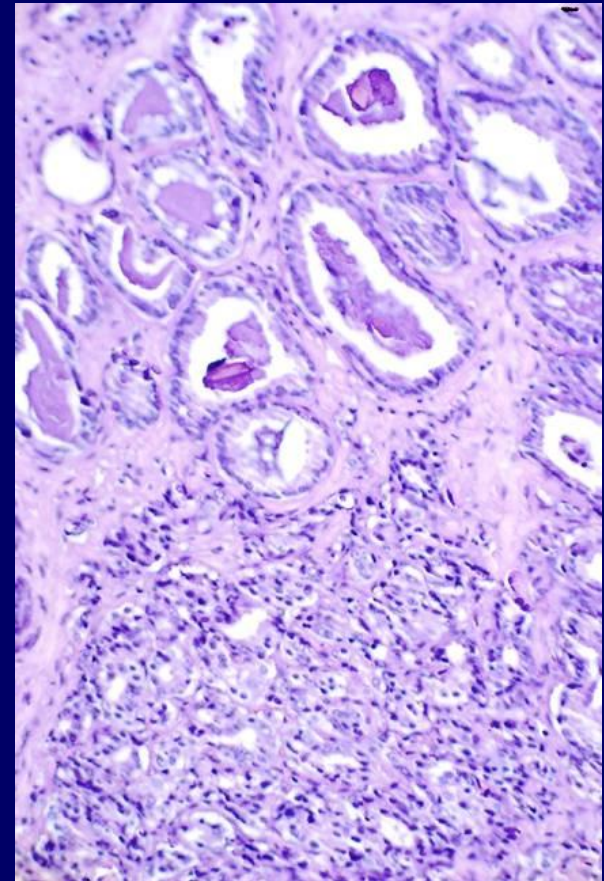


Other Workup

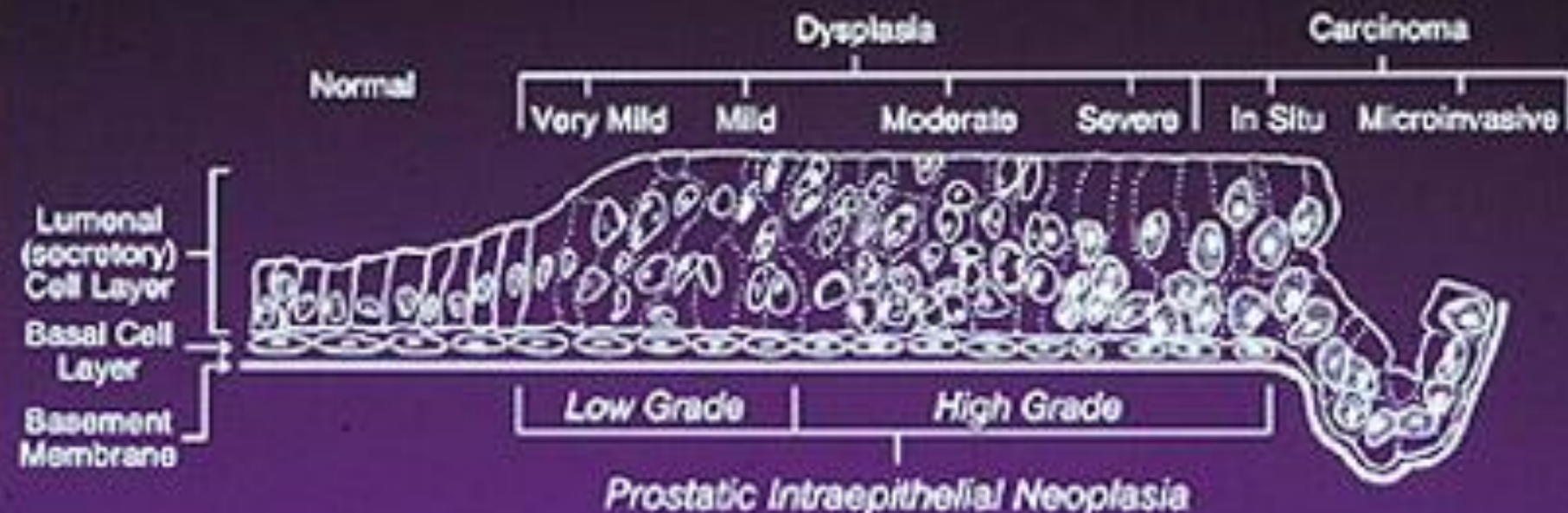
- ☐ Bone scan
 - ☐ CT abdomen/pelvis
 - ☐ PET scan
 - ☐ Chest x-ray
-

Histology

- 99% Adenocarcinoma
- 1% Other
 - Sarcoma, small cell, other
- PIN – do NOT abstract
 - 30% men will go on to develop CaP
 - Close follow-up recommended for 2 years

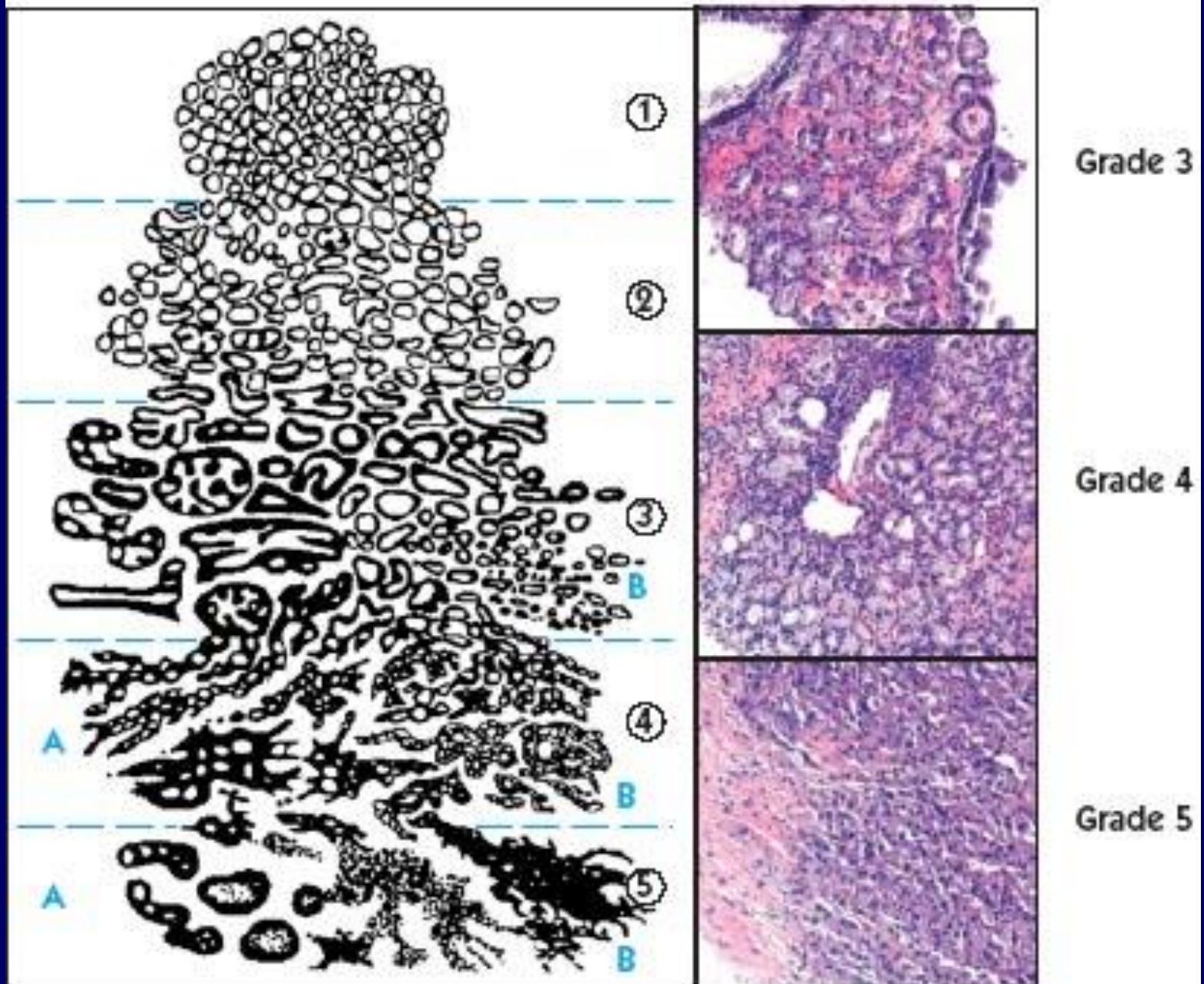


Carcinogenesis in Prostatic Adenocarcinoma



Bostwick, D.G., The Pathology of Early Prostate Cancer,
CA 39: 376-393, 1989

FIGURE 1. Gleason Grading System Diagram





Grade Priority (FORDS)

- 1. Gleason's grade
 - 2. Terminology
 - Differentiation (well differentiated, moderately differentiated, etc)
 - 3. Histologic grade
 - Grade I, grade II, grade III, grade IV
 - 4. Nuclear grade only
-

Grade Conversion

Gleason's Score	Gleason's Pattern	Histo Grade	Terminology	SEER Code
2, 3, 4	1, 2	I	Well differentiated	1
5, 6	3	II	Moderately differentiated	2
7, 8, 9, 10	4, 5	III	Poorly differentiated	3

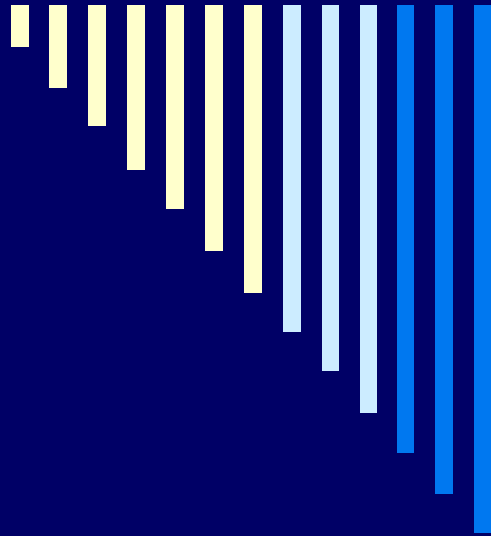


Partin nonogram

- Doctors need PSA, Gleason score, and clinical staging items (PE)
- Can determine probability of:
 - Organ-confined disease
 - Extraprostatic extension
 - Seminal vesical invasion
 - Lymph node involvement
- urology.jhu.edu/prostate/partintables.php

TABLE I. Clinical Stage T1c (nonpalpable, PSA elevated)

PSA Range (ng/ mL)	Pathologic Stage	Gleason Score				
		2-4	5-6	3+4=7	4+3=7	8-10
4.1– 6.0	Organ confined	90 (78–98)	80 (78–83)	63 (58–68)	52 (43–60)	46 (36–56)
	Extraprostatic extension	10 (2–22)	19 (16–21)	32 (27–36)	42 (35–50)	45 (36–54)
	Seminal vesicle (+)	—	1 (0–1)	3 (2–5)	3 (1–6)	5 (3–9)
	Lymph node (+)	—	0 (0–1)	2 (1–3)	3 (1–5)	3 (1–6)
6.1– 10.0	Organ confined	87 (73–97)	75 (72–77)	54 (49–59)	43 (35–51)	37 (28–46)
	Extraprostatic extension	13 (3–27)	23 (21–25)	36 (32–40)	47 (40–54)	48 (39–57)
	Seminal vesicle (+)	—	2 (2–3)	8 (6–11)	8 (4–12)	13 (8–19)
	Lymph node (+)	—	0 (0–1)	2 (1–3)	2 (1–4)	3 (1–5)



Collaborative Staging: Prostate



CS Extension – Clinical/Notes

- 1: Do not include prostatectomy info
 - 2: Explains codes
 - 10 – 15: clinically INapparent
 - 20 – 24: clinically apparent (palpable, radiology)
 - 30: Not know if clinically apparent
 - 31, 33, 34 OBSOLETE about apex
 - 41 – 49 extension beyond prostate
-

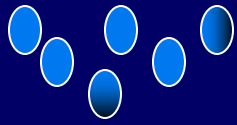


CS Extension – Clinical/Notes

- 3: Talks about apex, but that is in SSF now
 - 4: 13 – 14 when TURP done
 - 5: Prostatic urethra involvement no effect
 - 6: “Frozen pelvis” definition
 - 7: AUA stages included
 - 8: Pathologic tissue of other organs
 - 9: Explains how mapping works
-



CS Extension - Clinical



$\leq 5\%$

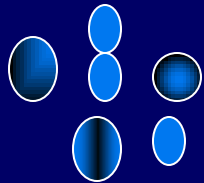
00 in situ

10 – T1 NOS

13 – T1a $\leq 5\%$

14 – T1b $> 5\%$

15 – T1c because
of needle biopsy



$> 5\%$

Clinically Inapparent

- Not palpable
- Not visible on imaging
- Not visible on sono
- Incidental finding
- Latent
- Occult

CS Extension - Clinical

20 – T2 NOS 1 lobe

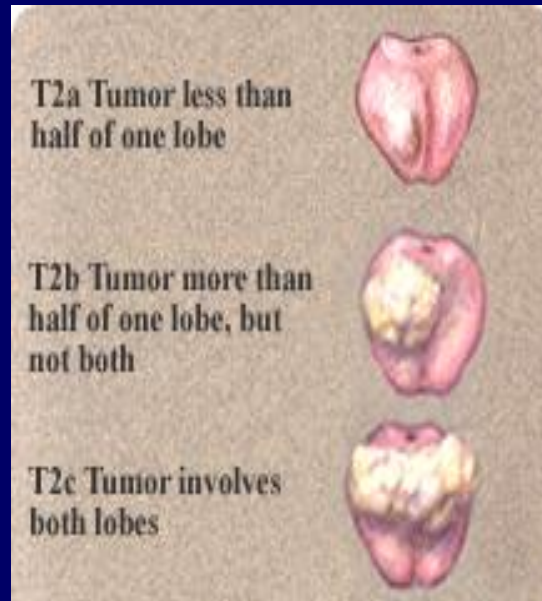
21 – T2a $\leq \frac{1}{2}$ lobe

22 – T2b $> \frac{1}{2}$ lobe

23 – T2c both lobes

24 – Stage B NOS

30 – Localized NOS

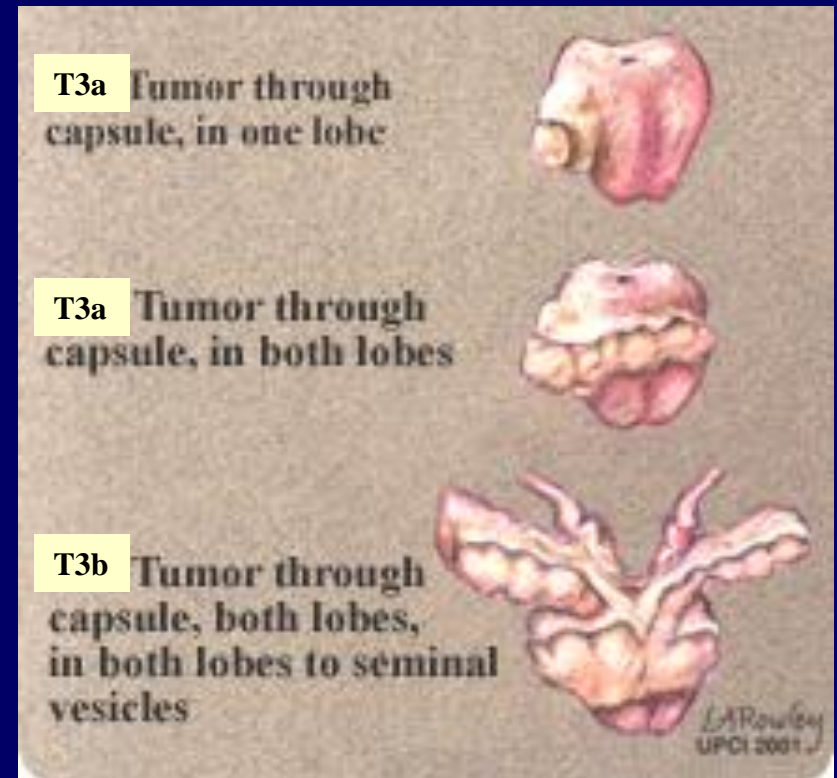


Clinically Apparent

- Palpable
 - Nodule
 - Induration
 - Firm, Irregular
- Visible on imaging
 - Extracapsular extension
- Visible on sono
 - Hypoechoic
 - Streaky densities

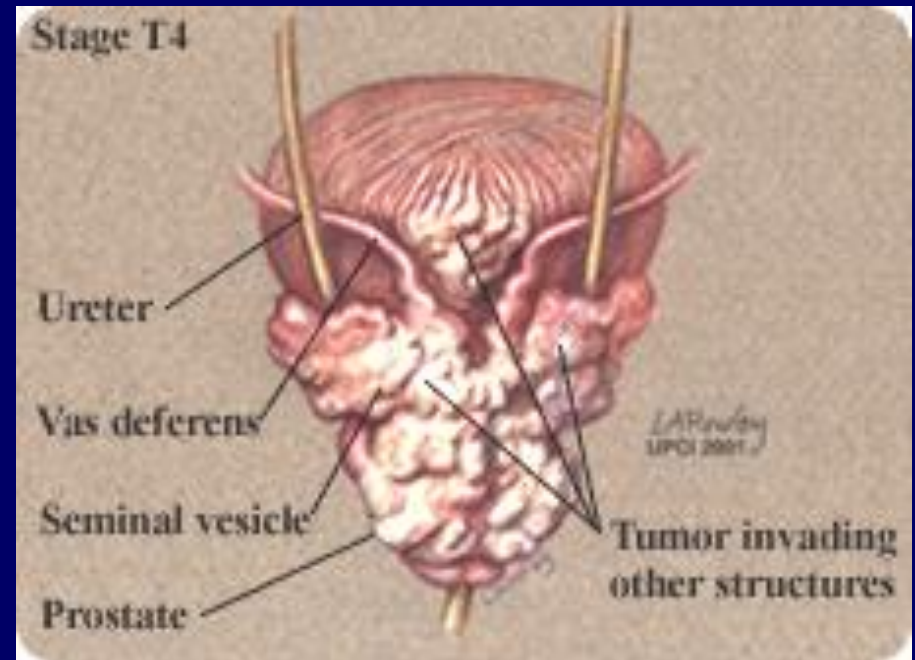
CS Extension - Clinical

- 41 - T3 NOS thru capsule NOS
- 42 – T3a unilateral
- 43 – T3a bilateral
- 45 – T3b seminal vesicle
- 49 – T3 NOS
Periprostatic extension NOS



CS Extension - Clinical

- 50 – T4 extension to/ fixation to adjacent
- 52 – T4 muscles, ureter
- 60 – T4 pelvic wall or bone, “frozen” pelvis
- 70 – T4 further contiguous extension
- 95 No evidence
- 99 Unk



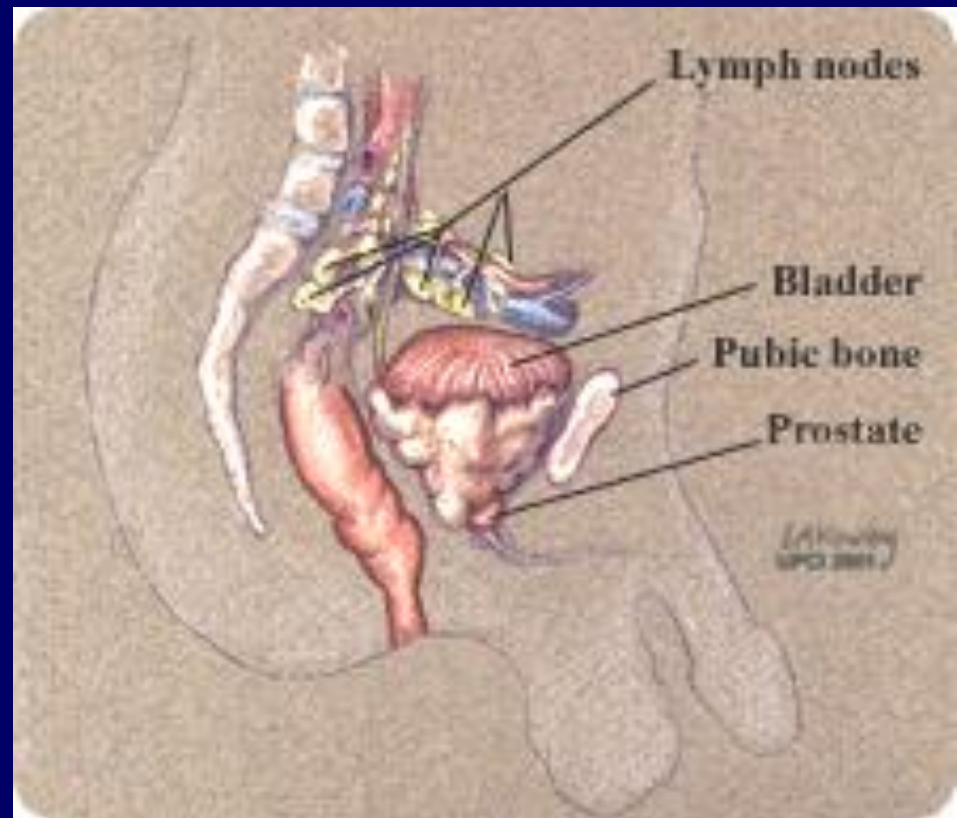
CS Evaluation Fields (CS/TS)

0	PE, Imaging, clinical; no path, no autopsy	c
1	Scope, biopsy, no surg resection, no aut	c
2	Bx of extraprostatic tissue	p
3	Autopsy (dx before death)	p
4	Surg resect w/o neoadjuvant	p
5	Surg resect WITH neoadjuv, clinical	c
6	Surg resect WITH neoadjuv, path	y
8	Autopsy (dx unknown pre death)	a
9	Unk if surg resect, not documented	c

CS Lymph Nodes

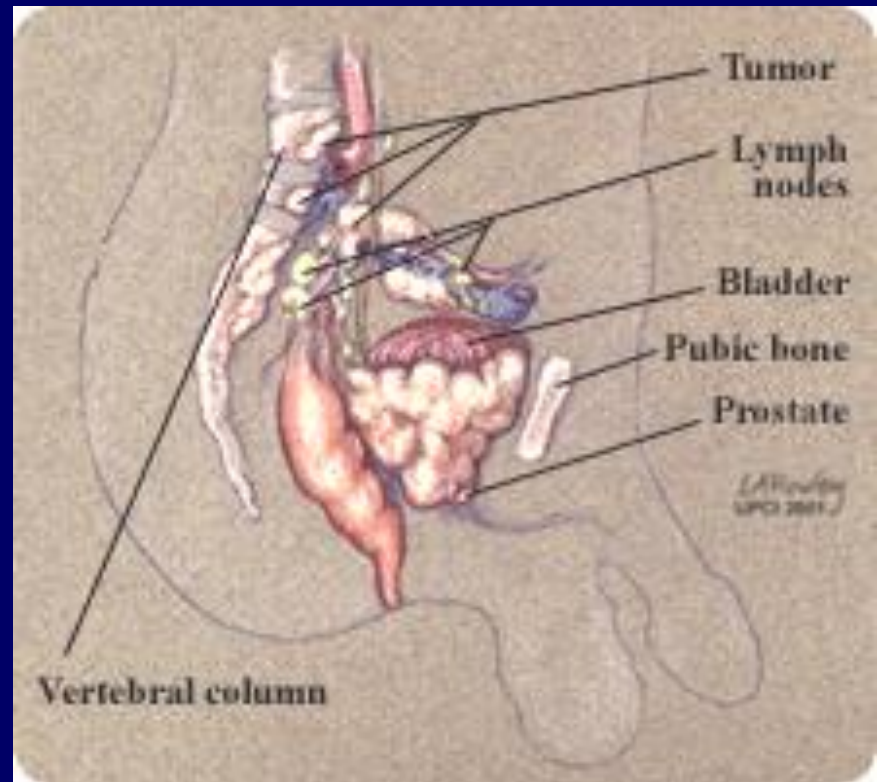
- Prostate is inaccessible organ (pg 14)
- 00 None
- 10 Regional LNs
- 80 LNs NOS
- 99 Unknown

- CS Reg Nodes Eval,
Pos, # Eval
Use Standard Table



CS Mets at Dx

- ❑ Prostate is inaccessible organ
- ❑ 00 None
- ❑ 11 Common iliac LN
- ❑ 12 Other distant LN
- ❑ 30 Bone mets (not direct*)
- ❑ 35 – 30 + 11 or 12
- ❑ 40 Other distant mets
- ❑ 45 Mets NOS
- ❑ 50 40 - + 11 or 12
- ❑ 55 40 - + 30 or 35
- ❑ 99 Unknown





Site Specific Factors

SSF 1 PSA Value

000 Test not done

001 - < 0.1

002 – 989 actual #

990 - ≥ 99.0 ng/ml

999 Unknown

SSF 2 PSA

000 Test not done

010 Positive

020 Negative

030 Borderline

080 Order, results ??

999 Unknown

- ❑ Highest PSA prior to bx or tx
- ❑ Use same value for SSF1 and SSF2



Why PSA Twice?

- PSA varies by age & race patient
 - < 40 y.o. < 2.0 ng/ml
 - 40-50 y.o. < 2.5 ng/ml
 - 51-60 y.o. < 3.5 ng/ml
 - 61-60 y.o. < 4.5 ng/ml
 - > 70 y.o. < 6.5 ng/ml
 - PSA varies norms by lab method
 - Generally, 4-10 ng/ml borderline
-



SSF 3 Pathologic Extension Notes

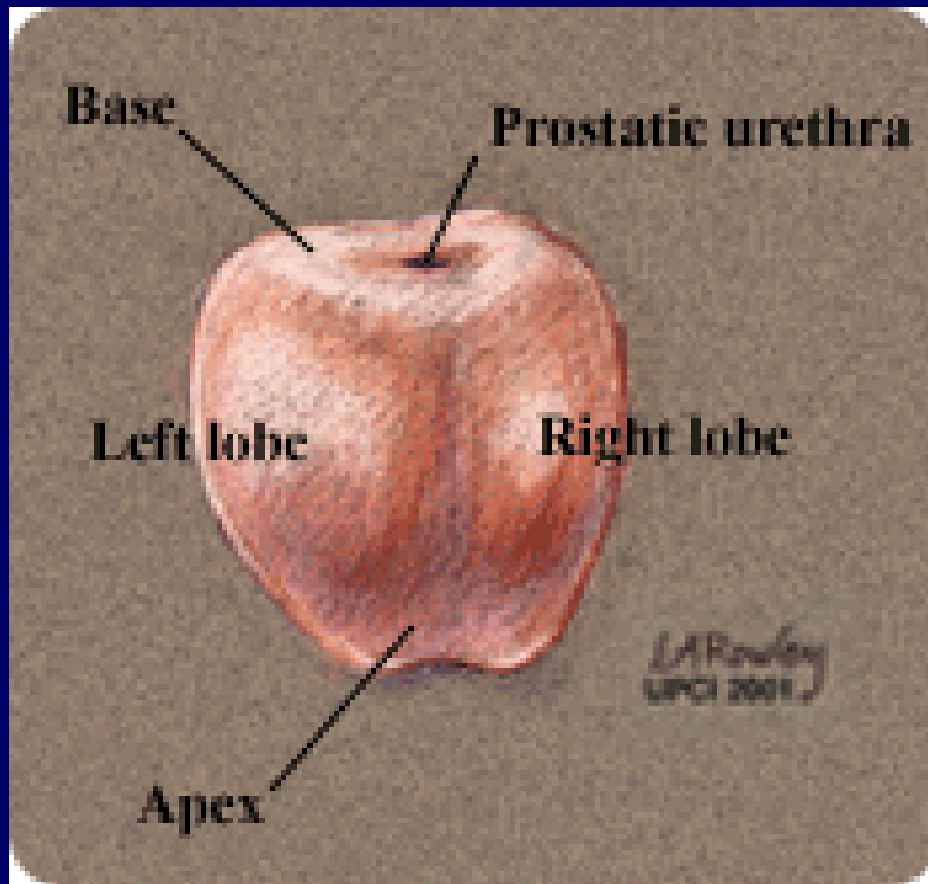
1. Prostatectomy info only
 2. Prostatectomy done as first course
 3. Involvement prostatic urethra not matter
 4. Apical or distal urethral margin, bladder base or neck margin + w/o extension = 040
 5. 031, 033, 034 OBSOLETE about apex
 6. If incidental dx, code appropriately per path
 7. “Frozen pelvis” definition
 8. AUA stages included
 9. Explains how mapping works
-



SSF3 similar to CS Extension

- 3-digit code
- No T1 codes
- 024 absent
- 040 Margins involved
 - 045 = T3b
 - 048 = T3a
- 048 extracapsular extension
- 095 No evidence primary
- 096 Unknown if prostatectomy done
- 097 No prostatectomy w/in first course
- 098 *Prostatectomy performed but not first course*

SSF 4 Prostatic Apex



- 1 No involvement
- 2 Into/arising in
- 3 Arising in
- 4 Extension into
- 5 Apex extension unk

1st number = clinical
2nd number = path



SSF4 Apex

- ❑ 1 No involve – statement of normal apex or neg on path
 - ❑ 2 Into/arising NOS – can't be determined where cancer started (avoid this code)
 - ❑ 3 Arising in – If apex is ONLY site of cancer
 - ❑ 4 Extension to – cancer present in other parts + apex
 - ❑ 5 Unknown – no description; no prostatectomy
-



SSF 5 & 6

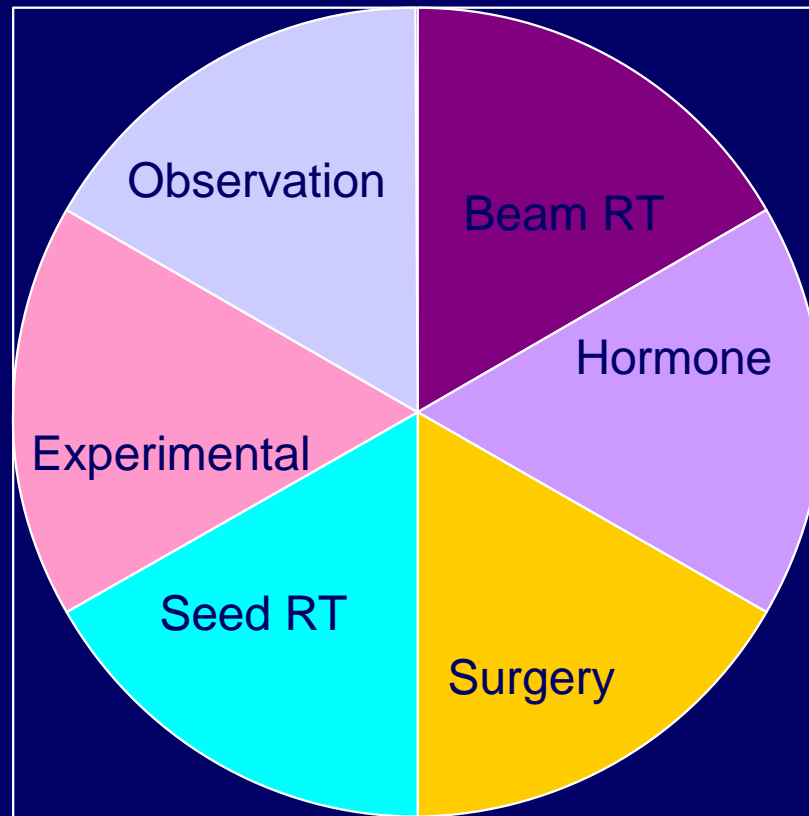
SSF 5 Gleason's pattern

- Note 1 explains what to do if only 1 number
- If more than one Gleason's pattern, **use the one from the largest specimen**
 - Different from other rules where we code to the worst
 - This is not instructions for grade of tumor
 - If multiple Gleason's in single specimen, use the worst

SSF 6 Gleason's score

- Note 1 same
- Add the 2 patterns
- If more than one, use largest specimen

Treatment



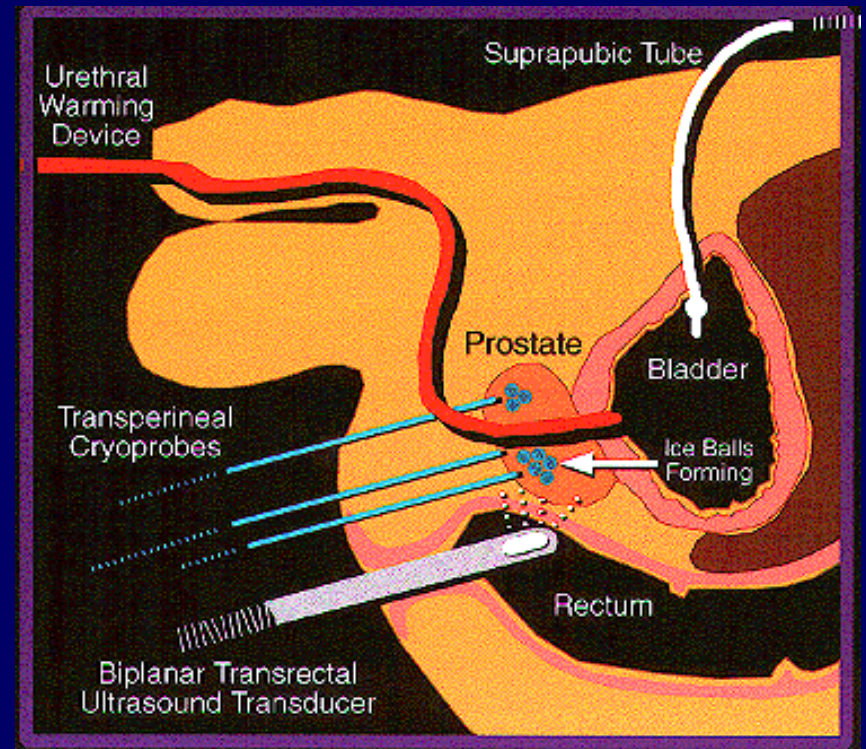
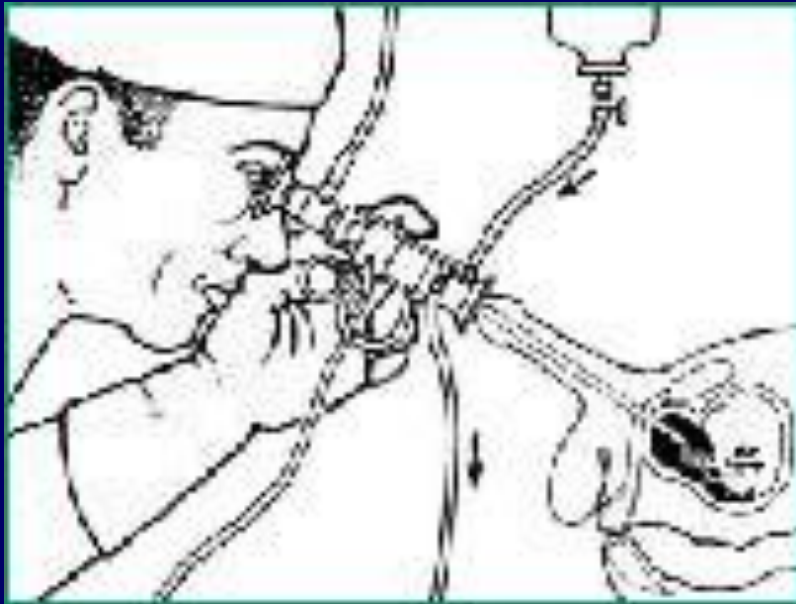


Watchful Waiting

- aka Active Surveillance
 - PSA q 6 mos
 - Slow growing cancer
 - Delay for other diseases to improve
 - Comorbidities prevent other tx
-

Surgery

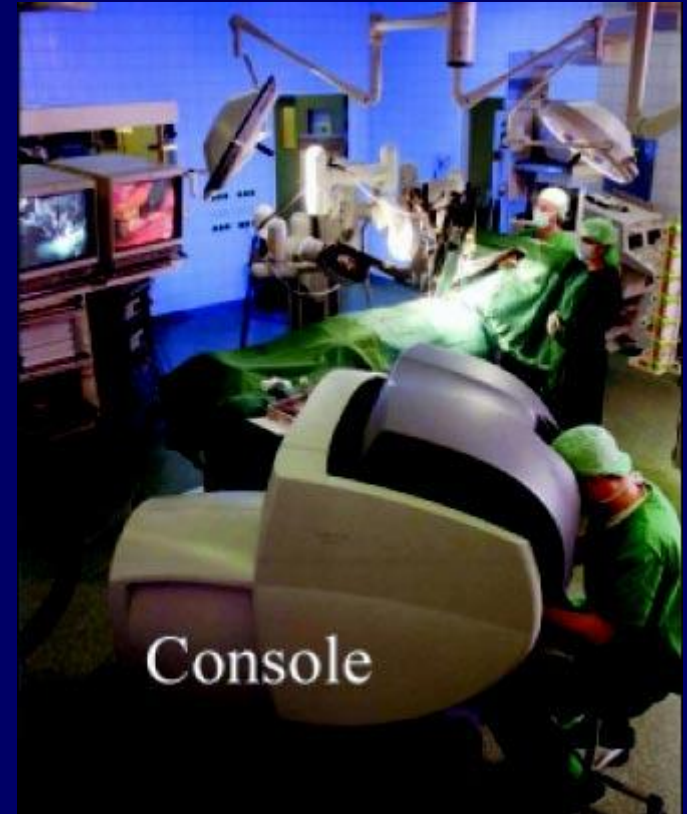
TURP



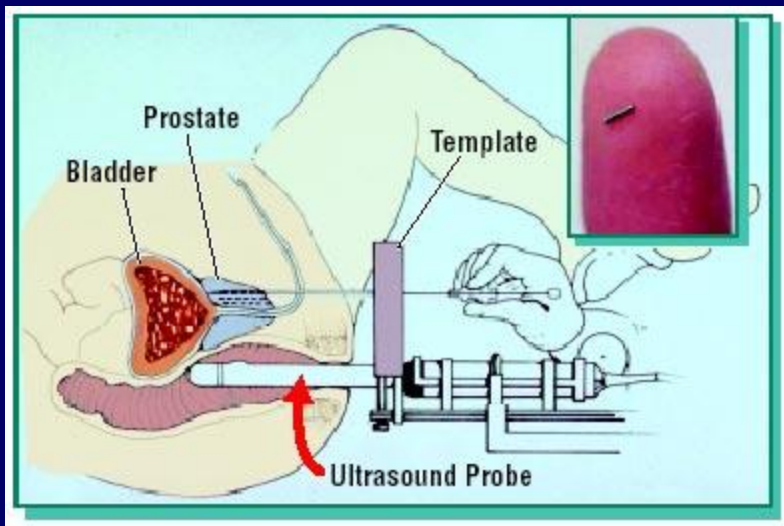
CRYOSURGERY

Prostatectomy

- Perineal, Retropubic, Suprapubic – depends on patient anatomy and surgical history
 - Nerve-sparing
 - Robotic

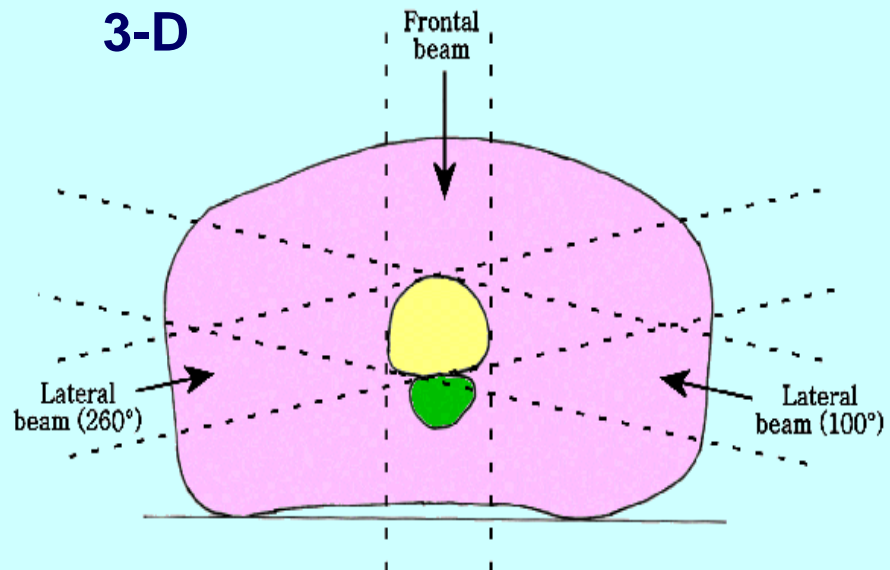


Brachytherapy



Beam Radiation

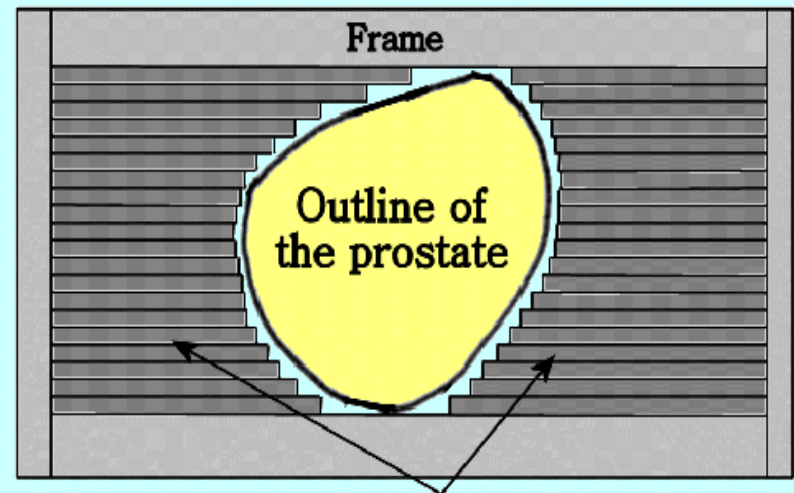
3-D



A sketch of a simple 3-beam conformal radiotherapy geometry.

Prostate sitting on rectum

IMRT

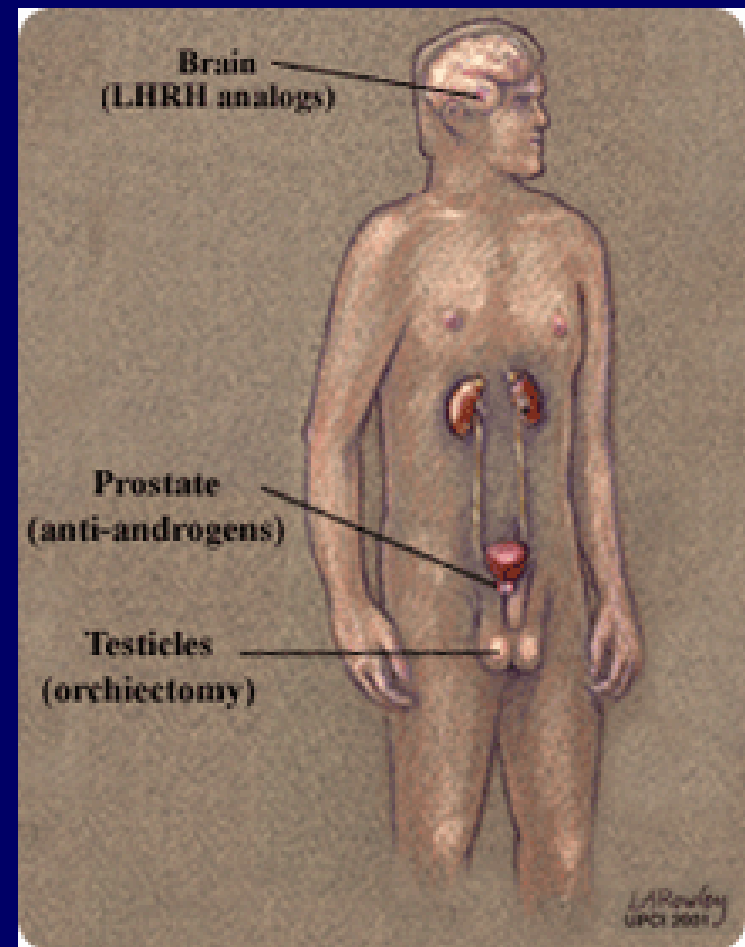


40 independently positioned Tungsten leaves.

Sketch of a multileaf collimator.

Hormone Therapy

- LHRH analogs
 - Lupron, Zoladex
- Androgen blockades
 - Casodex, Eulexin, Nilandrone
- Estrogen therapy (DES)
- NOT orchiectomy





Other

Hem Tsplt & Endocrine Procedures

- Endocrine surgery or radiation
 - Bilateral
 - Could have subcapsular orchi
 - Could have testicular prosthesis

Chemotherapy

- Not first course
 - Stage IV
 - Hormone refractory



Experimental

- Hyperthermia
 - Laser ablation
 - Alternative medicine
 - Pomegranate juice
 - Ginseng
 - Fasting
 - Mini-trampoline
 - Vitamin D
 - Vaccines
-

Side Effects of Treatment

Treatment	Side Effect	Frequency
Radical prostatectomy	• Erectile dysfunction	20–70%
	• Urinary incontinence	15–50%
External beam radiation therapy	• Erectile dysfunction	20–45%
	• Urinary incontinence	2–16%
Androgen deprivation therapy	• Sexual dysfunction	20–70%
	• Hot flashes	50–60%
Watchful waiting	• Erectile dysfunction	30%



Treatment for Recurrence/Mets

- Hormones
 - Orchiectomy
 - Radiation to mets
 - Radioisotopes
 - strontium-89 (Metastron)
 - samarium-153 (Quadramet)
 - Chemotherapy
-



Follow-Up (NCCN Guidelines)

OBSERVATION

- < 10 years?
 - H&P q 6 mos
- 10 years?
 - PSA & DRE q 6 mos
 - Repeat bx at 1 year

CURATIVE

- PSA q 6 mos x 5 yr
- DRE q year x 5 yr

STAGE IV

- PSA q 3-6 mos
- H&P w/sx discussion